INTERLOCKING LANDSCAPE/BUILDING TILES

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to an interlocking tile system for use in landscaping and architectural applications. In another aspect, the invention relates to a system comprising a plurality of tile sections secured together by a lattice structure of interlockable fastening strips.

2. Description of the Prior Art

Landscaping and architectural tiles are particularly popular building materials because of their attractiveness and durability. Architectural tiles, particularly those used indoors as flooring and wall covering, are commonly made of ceramic, porcelain, or natural stone materials which makes the tiles particularly suitable for high-traffic, moisture prone areas. Conventionally, indoor architectural tiles are laid on a surface one at a time and must be secured together using grout. Occasionally, depending upon the wear and tear inflicted upon the tiles, the grout must be replaced. Also, the grout is susceptible to mold and mildew which can lead to discoloration thereof and damage the aesthetic qualities of the tile system.

Landscaping tiles are useful in creating outdoor walkways, patios, borders and the like and most commonly are made from durable materials that are relatively weather resistant. Like the indoor architectural tiles, landscaping tiles are conventionally laid one at a time and must be generally tightly packed so as to prevent weeds from growing up therebetween. In some applications (particularly on uneven terrain) it may be necessary to apply cement between the tiles in order to hold them in place relative to each other. Also, these conventional tile systems, which are relatively inflexible once set into place, are susceptible to damage caused by freezing and thawing cycles of the ground.

OBJECTS AND SUMMARY OF THE INVENTION

It is, therefore, an object of the present invention to provide an interlocking tile system enabling relatively quick assembly of large sections of tiles into a single, unitary mat that does not require grout to hold the individual tiles in place.

It is a further object of the invention to provide a tile system that is sufficiently flexible to follow the natural contours of a surface and to account for the swelling and contraction of the surface due to temperature changes.

It should be understood that the above-listed objects are only exemplary, and not all the objects listed above need be accomplished by the invention described and claimed herein.

Accordingly, one aspect of the present invention concerns a tile system comprising: (a) a plurality of tile sections, each tile section including (i) a plurality of individual tiles cooperatively defining a plurality of transversely extending channels, and (ii) a mesh attached to at least some of the tiles; and (b) a plurality of interlockable fastening strips received in the transversely extending channels and securing the tile sections to one another.

Another aspect of the present invention concerns a tile system comprising: (a) a plurality of individual tiles cooperatively defining a plurality of transversely extending channels; (b) a mesh attached to at least some of the tiles; (c) a plurality of spacer blocks attached to at least a portion of the mesh opposite the tiles; and (d) a plurality of elongated, interlockable fastening strips received in the transversely extending channels and securing the tiles to one another.

A further aspect of the present invention concerns a method of laying tile comprising the steps of: (a) placing first and second tile sections next to one another, each of the tile sections including a plurality of individual tiles and a mesh attached to at least some of the individual tiles, the individual tiles cooperatively defining first transversely extending channels within each of the tile sections, the first and second tile sections cooperatively defining a second transversely extending channel therebetween; (b) placing a first interlocking fastening strip in at least a portion of the first channel of the first tile section and in at least a portion of the first channel of the second tile section, the first fastening strip intersecting the second channel; and (c) placing a second interlocking fastening strip in the second channel between the first and second tile sections, the second fastening strip interlocking with the first fastening strip.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

A preferred embodiment of the present invention is described in detail below with reference to the attached drawing figures, wherein:

FIG. 1 is an expanded view of an interlocking tile system with a lattice structure of interlocking strips that overlap between tile sections;

FIG. 2 is an exploded view of an interlocking tile system showing the individual tiles, intermediate mesh, spacer blocks, and interlocking strips;

FIG. 3 is a close-up cross-sectional view of an interlocking tile system laid upon a surface;

FIG. 4 depicts a tile anchoring system comprising a screw-type auger and washer with a section of tile shown in phantom;

FIG. 5 is a top view of a wedge-shaped tile section;

FIG. 6 is a top view of a plurality of the tile sections shown in FIG. 6 arranged to form a curved tile system;

FIG. 7 is a top view of a tile system having a pre-designed image formed by the assembly of a plurality of tile sections; and

FIG. 8 is a top view of another tile system having a pre-designed imaged formed therein.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring initially to FIG. 1, a tile system 10 is shown comprising a plurality of tile sections 12, each of which includes a plurality of individual tiles 14. Fastening strips 16, 18 are used to couple and lock tile sections 12 together. The assembly of tile system 10 is described in more detail below.

As shown in FIG. 2, tile section 12 includes a plurality of individual tiles 14 coupled together by a durable mesh section 20. Preferably, mesh section 20 is secured to the bottom surface 22 of tiles 14 by a first adhesive layer 24 (see FIG. 3). Spacer blocks 26 are secured to mesh 20 by a second adhesive layer 28. In alternate preferred embodiments, mesh 20 may also be embedded within tiles 14 during fabrication thereof and spacer blocks 26 eliminated.

Tile section 12 comprises a plurality of transversely extending channels 28, 30 defined by the edges of the plurality of individual tiles 14. A plurality of fastening strips 16 are set in channels 28 which run substantially parallel to each other. Strips 16 comprise a plurality of grooves 32 which extend from the top edge 34 of the strip to some point above the bottom edge 36 of the strip. Preferably, grooves 32 extend to some point proximate the

mid-point between the top and bottom edges 34, 36 of strip 16. Grooves 32 are positioned at the intersection of channels 28 and 30.

Strips 18 comprise a plurality of grooves 38 which extend from the bottom edge 40 of strip 18 to some point below the top edge 42 of the strip. Preferably, grooves 38 extend to some point proximate the mid–point between top and bottom edges 40, 42 of strip 18. Strips 18 are placed in channels 30 which also run substantially parallel to each other, but intersect channels 28 is a substantially perpendicular manner. It is not always necessary for channels 28, 30 to run parallel to each other, respectively, or intersect in a substantially perpendicular manner. As explained in the discussion of FIGS. 5 and 6 below, these channels may be oblique relative to each other and intersect in an oblique manner. Grooves 38 are positioned at the intersection of channels 28 and 30 and mate with grooves 32 formed in strips 16. This interlocking action of strips 16 and 18 creates a unitary lattice structure that occupies at least a portion of the space between tiles 14 and operates to fix tiles 14 in position.

Strips 16, 18 comprise a plurality of fastening tabs 44 attached to the respective bottom edges 36, 40 thereof. Tabs 44 are generally hook-shaped and configured for insertion through mesh 20. The generally hook-shaped structure of tabs 44 prevents the withdrawal of tabs 44 from mesh 20 and, consequently, the removal of strips 16, 18 from channels 28, 30. Spacer blocks 26 operate to space mesh 20 from the surface 46 (FIG. 3) upon which tile system 10 is applied and give channels 28, 30 added depth so as to facilitate insertion of tabs 44 through mesh 20. In those embodiments that omit spacer blocks 26, i.e., where mesh 20 is embedded in tiles 14 during fabrication thereof, mesh 20 is placed at some point between the top and bottom surfaces of tile 14, and preferably at some point closer to the bottom surface than the top surface of tile 14.

Strips 16, 18 are placed in channels 28, 30 so that only a portion of strip 16, 18 is located entirely within channels 28, 30 of any one particular tile section 12. It is preferable for at least a portion of strips 16, 18 be positioned in at least a portion of channels 28, 30 of adjacent tile sections 12. Thus, adjacent tile sections 12 are secured together by strips 16, 18 and formed into unitary tile system 10. Any portions of strips 16, 18 which extend beyond the outer boundaries of tile system 10 may be trimmed away as necessary.

Turning now to FIG. 3, a cross-sectional view of tile system 10 is shown after being laid upon surface 46. Preferably, tile system 10 is installed on the ground and is useful for forming a tile patio, walkway, or simply a decorative landscaping feature; however, tile

system 10 may also be used indoors. After a plurality of tile sections 12 are laid upon surface 46, fastening strip 16 is inserted into channel 28 and fastening tabs 48 are inserted through mesh 20. The tabs 48 illustrated in FIG. 3 depict an alternate embodiment than tabs 44 illustrated in FIGS. 1 and 2. Tabs 48 comprise a more arrow-like, or even pyramidal, shape as opposed to hook-shaped tabs 44. As shown, surface 46 provides a relatively level grade for tile system 10. In such an arrangement, it is not necessary to permanently couple system 10 with surface 46. The weight of system 10 is sufficient to keep it in relatively fixed position with respect to surface 46.

Tile system 10 may also be used with uneven or sloping terrain. In such applications, the tile system 10 may be secured to the ground using an anchor 50 to prevent erosion of the underlying soil. In the embodiment illustrated in FIG. 4, one tile 14 and the corresponding spacer block 26 are removed from tile system 10 by cutting through mesh 20. A retaining plate 52 is placed in the void left by tile 14. Plate 52 comprises an outer lip 54 which rests upon the top surfaces of tiles 14 adjacent to the void. Plate 52 further includes a circumferential inwardly and downwardly sloping sidewall 56 which terminates in a recessed surface 58. Recessed surface 58 includes a central annular orifice formed therein which enables anchor 50 to be inserted therethrough. The shaft 62 of anchor 50 is helically flighted so that anchor 50 will bore into the ground when rotated. Anchor 50 also contains a hex-head 60 so that a wrench or socket may be used to rotate and drive anchor 50 into the ground. Washer 64 provides a resting surface for hex-head 60 and prevents hex-head 60 from passing through the annular orifice of recessed surface 58. The anchoring system shown in FIG. 4 allows anchor 50 to be located entirely below the grade of tiles 14 thereby reducing the potential stumbling hazard presented by anchor 50.

Tiles 14 may be constructed of any natural or synthetic material suitable for use as tiling. Preferred tile materials include porcelain, concrete, stone, aggregate, brick, synthetic resin material (such as PVC, polypropylene, or polyethylene), metal, glass, wood, other cellulose-based materials, and combinations thereof. Preferably, the tile material is relatively fairly weather resistant, especially if tiles 14 are used in an outdoor application.

Likewise, mesh 20 is preferably formed from a durable, moisture resistant material. Preferably, the mesh material is also be relatively flexible enabling anchoring tabs 44 to pass therethrough without breaking. Preferred mesh materials include, natural and synthetic resin materials (such as rubber, polypropylene, polyethylene, nylon), natural and synthetic fibrous materials, and metals such as stainless or galvanized steel. The size of

mesh 20 is selected in conjunction with the size of the locking tabs 44 used therewith. Mesh 20 is large enough to permit insertion of tabs 44 therethrough (taking into account some slight deformation of the mesh), but fine enough to prevent withdrawal of tabs 44 therefrom.

Fastening strips 16, 18 are also formed of a durable, moisture resistant material. The strip material is preferably more rigid than the mesh material, but is still capable of some flexing, particularly for applications in which channels 28, 30 are slightly curved. Examples of these types of applications are shown in FIGS. 5 and 6. Preferred fastening strip materials include both natural and synthetic resin materials such as those described above, and metals such as stainless or galvanized steel. The aesthetic qualities presented by the fastening strip material is also an important quality because at least portion of the strips will be visible when strips 16, 18 are installed in channels 28, 30. In this regard, the color of strips 16, 18 may be selected so as to contrast with the tiles, and may be of differing widths to further accentuate various features of tile system 10.

FIGS. 5 and 6 depict wedge-shaped tile sections 66 that can be used to create curved portions in a tile system 68. Wedge-shaped sections 66 may be manufactured as such, or, more preferably, formed by cutting a rectangular tile section 12 with an appropriate tile cutting tool. The wedge-shaped sections 66 may be used to create curving walkways or borders around objects such as trees and shrubs. It is important to note, however, that the invention is not limited to merely rectangular tile sections 12 or wedge-shaped sections 66. Tile sections of virtually any shape may be cut and used with the present invention. Also, it is within the scope of the invention to use individual tiles that are non-rectangularly shaped (i.e., triangular, hexagonal, octagonal, curvilinear, etc.). It is also possible for differing tile shapes to be used in the same tile section. For example, rectangular tiles may lay adjacent triangular tiles, all of which being bound together by the same mesh 20. Of course, the shape of the tiles may affect the channels formed between adjacent tiles, and thus alter the configuration of the lattice structure formed by fasting strips 16, 18.

Tiles 14 are secured together in such an manner so as to be flexible enough to accommodate being placed on uneven surfaces and still allow water to permeate therebetween and reach the underlying surface. However, tiles 14 and fastening strips 16, 18 are placed close enough together so as to prevent grass or weeds from growing in between tiles 14. Optionally, adhesive or mortar applied to the bottom surfaces of spacer blocks 26 may be used to fixedly secure tile system 10 when system 10 is to be used in an architectural setting or as a high-traffic walkway.

FIGS. 7 and 8 depict exemplary decorative designs which may be formed with the present invention. As shown in FIG. 7, tile system is in the form of an United States flag having alternating rows of tiles 70, 72 for the flag stripes and an field 74 having alternating tiles 14 representing the stars. This tile system 10 may be packaged and sold as a complete unit enabling the purchaser to install this particular design in a preferred location. FIG. 8 is a fanciful design pattern formed by a plurality of identical tile sections 12 formed into a tile system 10.

The preferred forms of the invention described above are to be used as illustration only, and should not be used in a limiting sense to interpret the scope of the present invention. Obvious modifications to the exemplary embodiments, set forth above, could be readily made by those skilled in the art without departing from the spirit of the present invention.

The inventor hereby states his intent to rely on the Doctrine of Equivalents to determine and assess the reasonably fair scope of the present invention as it pertains to any apparatus not materially departing from but outside the literal scope of the invention as set forth in the following claims.